

Claims

1. A process of making a fuel or chemical from a biomass hydrolyzate comprising the steps of:
- 5       (a) providing a biomass hydrolyzate;
- (b) adjusting pH of the hydrolyzate;
- (c) contacting a metal oxide, having an affinity for guaiacyl or syringyl functional groups or both, and the hydrolyzate for a time sufficient to form an adsorption complex;
- 10      (d) removing the complex wherein a dissolved sugar fraction is provided; and
- (e) converting the sugar into a fuel or chemical using a microorganism.
2. The process of claim 1 wherein the metal oxide is selected from the group consisting of titanium dioxide, vanadium oxide, and zirconium oxide.
- 15 3. The process of claim 1 wherein the adsorbed complex comprises a compound consisting essentially of lignin-derived phenol compounds.
4. The process of claim 1 wherein the pH is adjusted in the range of 6.0 to 9.2.
- 20 5. The process of claim 1 further comprising, after adjusting, heating the hydrolyzate to a temperature in the range of 80°C to 100°C.
6. The process of claim 1 wherein the microorganisms are selected from the group consisting of *r. Zymomonas mobilis*, *Saccharomyces cerevisiae D<sub>s</sub>A*, or *Lactobacillus rhamnosus*.
- 25 7. The process of claim 3 wherein the metal oxide comprises titanium oxide, the titanium oxide concentration being twice a phenol concentration of the hydrolyzate.

8. The process of claim 3 wherein the hydrolyzate is a softwood and the metal oxide concentration is four times a phenol content of the hydrolyzate.

9. The process of claim 4 wherein the dissolved sugar fraction includes less than one mg/mL of lignin-derived compounds.

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10. A fermentable medium comprising the undiluted sugar fraction of claim 1.